

REMARKS

Upon entry of the present amendment, claims 1 and 4-9 will remain pending in the above-identified application and stand ready for further action on the merits.

Claim 1 has been amended in this reply, and support for the amendment to claim 1 can be found in the specification as originally filed at page 5, lines 12-16. As such, the present amendment to claim 1 does not introduce new matter into the application as originally filed.

Claim Rejections - 35 USC § 102(b) and § 103(a)

Claims 1-7 and 9 have been rejected under the provisions of 35 USC § 102(b) as anticipated by or, in the alternative, under 35 USC § 103(a) as obvious over **Furukawa et al. US '540** (US 4,469,540).

Claims 1-9 have been rejected under the provisions of 35 USC § 103(a) as being unpatentable over **Furukawa et al. US '540** (US 4,469,540) in view of **Ishizawa et al. US '155** (US 5,780,155)

Claim 1 has been rejected under the provisions of 35 USC § 103(a) as being unpatentable over **Furukawa et al. US '540** (US 4,469,540) in view of **Kemp et al. US '105** (US 6,543,105).

Reconsideration and withdraw of each of the above rejections is respectfully requested based on the following considerations.

Incorporation-by-Reference of Earlier Remarks

The Examiner is respectfully requested to consider remarks set forth at pages 5-10 of the earlier filed reply of September 7, 2007, wherein the Applicants responded to the USPTO's previous rejection of claims 1-9 under the provisions of 35 USC § 103(a) over Furukawa et al

US '540 in view of Ishizawa et al. US '155. It is submitted that said remarks remain pertinent to a consideration of the patentability of the instant invention as claimed over the cited art of record. Accordingly, such remarks are incorporated herein by reference in their entirety.

Legal Standard for Determining Anticipation

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "When a claim covers several structures or compositions, either generically or as alternatives, the claim is deemed anticipated if any of the structures or compositions within the scope of the claim is known in the prior art." *Brown v. 3M*, 265 F.3d 1349, 1351, 60 USPQ2d 1375, 1376 (Fed. Cir. 2001) "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Legal Standard for Determining Prima Facie Obviousness

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally,

the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

"There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a *prima facie* case of obvious was held improper.).

"In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification." *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in

the art." *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The Supreme Court of the United States has recently held that the teaching, suggestion, motivation test is a valid test for obviousness, but one which cannot be too rigidly applied. See *KSR Int'l Co. v Teleflex Inc.*, 127 SCt 1727, 82 USPQ2d 1385 (U.S. 2007). The Supreme Court in *KSR Int'l Co. v. Teleflex, Inc., ibid.*, reaffirmed the Graham factors in the determination of obviousness under 35 U.S.C. § 103(a). The four factual inquiries under Graham are:

- (a) determining the scope and contents of the prior art;
- (b) ascertaining the differences between the prior art and the claims in issue;
- (c) resolving the level of ordinary skill in the pertinent art; and
- (d) evaluating evidence of secondary consideration.

Graham v. John Deere, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (U.S. 1966).

The Court in *KSR Int'l Co. v. Teleflex, Inc., supra.*, did not totally reject the use of "teaching, suggestion, or motivation" as a factor in the obviousness analysis. Rather, the Court recognized that a showing of "teaching, suggestion, or motivation" to combine the prior art to meet the claimed subject matter could provide a helpful insight in determining whether the claimed subject matter is obvious under 35 U.S.C. § 103(a).

Even so, the Court in *KSR Int'l Co. v. Teleflex, Inc., ibid.*, rejected a rigid application of the "teaching, suggestion, or motivation" (TSM) test, which required a showing of some

teaching, suggestion, or motivation in the prior art that would lead one of ordinary skill in the art to combine the prior art elements in the manner claimed in the application or patent before holding the claimed subject matter to be obvious.

Accordingly, while the courts have adopted a more flexible teaching, suggestion, motivation (TSM) test in connection with the obviousness standard based on the *KSR v. Teleflex* case, which case involved a mechanical device in a relatively predictable technological area, it remains true that, despite this altered standard, the courts recognize inventors face additional barriers in relatively unpredictable technological areas as noted in *Takeda Chemical Industries, Ltd. v. Alphapharm Pty., Ltd.*, 83 USPQ2d 1169 (Fed. Cir. 2007).

Further, the Examiner bears the initial burden of presenting a *prima facie* case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). “[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336, quoted with approval in *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007).

Distinctions Over the Cited Art

Furukawa et al. US 4,469,540

The USPTO misreads Furukawa et al. US ‘540 in two points. The first one is about a draw ratio. The USPTO alleges in the first paragraph of page 3 of the Office Action that there is no teaching in US ‘540 with respect to a draw ratio. To the contrary, however, Furukawa et al. US ‘540 describes “a stretch ratio of three times or more” (*see column 2, lines 10-11*). That is,

Furukawa et al. US '540 draws the fiber after melt spinning. This is exactly opposite the operation of "after the spinning, no drawing" of the claimed invention as recited in claim 1 of the instant invention. Accordingly, unlike the claimed invention, Furukawa et al. US '540 cannot provide "conjugate fiber having a minus value upon heat shrinkage".

The second point of the USPTO's misreading is about heat shrinkage. The USPTO alleges on page 6, paragraph 7 of the Office Action that Furukawa et al. US '540 teaches heat shrinkage in Table 2. The heat shrinkage described in Table 2 of Furukawa et al. US '540, however, is the one of a 25 cm-size square web. This fact is clear from (*i*) the description of the method of measuring "Percentage heat shrinkage of web" in column 6, lines 18-27, and (*ii*) the description of "Characteristics properties of nonwoven fabric" above the column showing "Percentage heat shrinkage" of Table 2 of Furukawa et al. US '540.

Thus, the property of the heat shrinkage described in Table 2 of Furukawa et al. US '540 is entirely different from that of the heat shrinkage of the conjugate fiber recited in claim 1 of the present application. When a fiber takes a form of a web, the heat shrinkage of the fibers is restrained, because the fibers are in the entangled state in a web. Therefore, it is natural that the heat shrinkage value of a web is smaller than the heat shrinkage value of a fiber itself. Please note that the heat shrinkage of the conjugate fiber recited in claim 1 of the present application is the value of a fiber itself measured without restraining fiber shrinkage. In order to achieve a minus value of heat shrinkage, an orientation index of the fiber should fall within a specific range as recited in claim 1.

In addition to the above points of the USPTO's misreading, it is also noted that Furukawa et al. US '540 is completely silent with respect to a fiber having a minus value of heat shrinkage.

Ishizawa et al. US 5,780,155

Ishizawa et al. US '155 discloses a melt-adhesive composite fiber containing a first component and a second component. The first component is a crystalline polypropylene. The second component is a polyethylene. The composite fiber has a side-by-side or sheath-core configuration so that the second component can occupy at least a portion of the fiber surface continuously in the lengthwise direction of the fiber. The melting point of the polyethylene is lower than that of the crystalline polypropylene by 20 °C or more. The composite fiber is produced by melt-spinning to prepare an unstretched fiber, followed by stretching the unstretched fiber at a temperature of higher than 90 °C, but lower than 130 °C, at a stretching ratio of 0.60 to 0.85 times the maximum stretching ratio. Again, the fiber is not produced by high speed melt-spinning. A nonwoven fabric which contains the composite fiber is evaluated in terms of fabric shrinkage. In the evaluation, the fabrics having a shrinkage of lower than 10% are regarded as acceptable. The orientation index and heat shrinkage of core-sheath type bi-component fibers disclosed in Ishizawa et al. US '155 are unknown.

The main distinction between the claimed invention and the invention disclosed in Ishizawa et al. US '155 resides in that the fibers of the reference do not satisfy an orientation index of a first resin component of 40% or higher and that of a second resin component of 25% or lower as defined in the claimed invention.

In particular, even if Ishizawa et al. US '155 uses the same kind of resins of the claimed invention, *i.e.*, a high density polyethylene and a polypropylene, the properties of the fibers produced from those resins can vary depending on the molecular weight and melt flow rate of the resins, and manufacturing condition of the fiber, etc. That is, although Ishizawa et al. US '155

may disclose a bi-component fiber composed of a combination of a high density polyethylene and a polypropylene, the disclosed bi-component fiber does not satisfy the orientation index defined in the claimed invention.

Further, it cannot be merely presumed that the fibers of Ishizawa et al satisfy the orientation index defined in the claimed invention, in view of the fact that the manufacturing steps used to form the fibers of Ishizawa are totally different from that of the fiber of the claimed invention. That is, the fiber of the claimed invention is produced by *high speed melt-spinning* followed by a heat or a crimp treatment, but not followed by drawing. This production process is a unique process which results in the aforementioned orientation index limitation being achieved.

By contrast, the fibers disclosed in Ishizawa et al. US '155 are merely fibers produced by conventional spinning under conventional conditions. Unlike the claimed invention, the production process of fibers disclosed in Ishizawa et al. US '155 do not include a heat or a crimp treatment after high speed melt-spinning. As a consequence of the failure to carry out a heat treatment or a crimp treatment after high speed melt-spinning, the fibers disclosed in Ishizawa et al. US '155 do not possess the orientation index of the claimed invention.

Further, the USPTO's previous reliance on the teaching of Ishizawa et al. US '155 of the use of "a low stretching ratio" of 0.6 to 0.85 is inconsistent with applicants' claim limitation of "no drawing".

Still further, on page 6 of the prior Office Action (*i.e.*, Office Action of May 7, 2007) the USPTO alleged that Ishizawa et al. US '155 teaches a low stretching ratio of 0.60 to 0.85 (col. 2, lines 1-5) which meets the limitation of low draw ratio recited in claim 1. This USPTO position, however, is not correct. The values of 0.60 to 0.85 cited by the USPTO refer to "0.60 to 0.85

time the maximum stretching ratio”, and thus are not values of the actual stretching ratio. Ishizawa et al. ‘155 describes in col. 4, lines 26-29 that “the maximum stretching ratio means the stretching ratio at which fluffs begin to occur in filaments tow (*sic.*) when the stretching ratio was gradually increased.” Thus, the value of 0.60 to 0.85 taught in Ishizawa et al. US ‘155 means the ratio of the actual stretching ratio to the maximum stretching ratio thus defined. This fact is more understandable from the working examples set forth in Ishizawa et al. US ‘155. Table 1 of US ‘155 (*see column 8*) illustrates the maximum stretching ratio and the actual stretching ratio, and the actual stretching ratio of Example 1 is 4.0. This value does not fall within the range of the claimed invention. Comparative Example 5 of the same Table 1 shows an actual stretching ratio of 2.0, as an example of undesirable ratio. It cannot be said from these teachings in Ishizawa et al. US ‘155 that the advantages of no drawing of the claimed invention are disclosed in Ishizawa et al. US ‘155. Instead, it is submitted that such disclosure in the cited Ishizawa et al. US ‘155 reference actually teach/lead a person having ordinary skill in the art away from the no drawing process of the claimed invention.

Furthermore, the instantly claimed invention is different from the invention disclosed in Ishizawa et al. US ‘155 with regard to the heat shrinkage of fiber. The fiber of the claimed invention has heat shrinkage values being minus, whereas Ishizawa et al. US ‘155 is silent about the heat shrinkage of the fiber. More specifically, as demonstrated in Example 2 of Table 1, or Example 5 of Table 3, of the present specification, the fibers of the claimed invention contain fibers which have negative heat shrinkage – in other words, the fibers elongate their length by the application of heat.

As such, it is clear that the fibers of the claimed invention are distinct from the fibers

disclosed in Ishizawa et al. US '155. In connection with heat shrinkage, Ishizawa et al teaches that the *nonwoven fabric* has a shrinkage of 10% or less. However, Ishizawa et al. US '155 is silent about *fiber* shrinkage. In Ishizawa et al. US '155, the web formed from a fiber as a raw material is subjected to heat, thereby producing a nonwoven fabric. The fiber in the web shrinks by the action of heat during the course of production.

Accordingly, even if additional heat is applied to the nonwoven fabric afterwards, the nonwoven fabric no longer shrinks, for that reason, it is quite natural that *the fabric* shrinkage is small in Ishizawa et al. US '155. However, it is the fiber shrinkage that is important in the claimed invention. Minimization of fiber shrinkage results in a smaller web shrinkage in the course of production, so that a nonwoven fabric having high bulkiness and high strength can be achieved.

Ishizawa et al. US '155 accordingly neither discloses nor suggest that a nonwoven fabric having high bulkiness and high strength can be obtained by using, as a raw material of nonwoven fabric, a thermally bondable fiber having the specific orientation index and heat shrinkage which are not taught in Ishizawa et al. US '155. It should be noted that the high bulkiness and high strength are inconsistent properties in the technical field of nonwoven fabric. Accordingly, the claimed invention is neither the same as those disclosed in Ishizawa et al. US '155, nor rendered obvious to a skilled person, absent the use of hindsight analysis.

The fibers used in Ishizawa et al. US '155 are similar to the bi-component fiber of the claimed invention only to the extent that the core is composed of a polypropylene and the sheath is composed of a high density polyethylene. Otherwise, all other material aspects of the

respective inventions are distinct from each other. Consequently, the nonwoven fabrics disclosed in Ishizawa et al do *not* exhibit the same bulk as the claimed invention.

Kemp et al. US 6,543,105

Newly cited reference Kemp et al. US '105 discloses a draw ratio. However, it is not the value of a draw ratio after the spinning, but the value in the course of the melt spinning. Kemp et al. US '105 does not control the orientation index of the fiber, so that the heat shrinkage of the fiber is such a large value as 6-11% (*see column 1, lines 56-64 of Kemp et al. US '105*). The fiber of the claimed invention having a minus value of heat shrinkage at all.

In view of the above, the claimed invention cannot be anticipated by nor rendered obvious over the cited references.

CONCLUSION

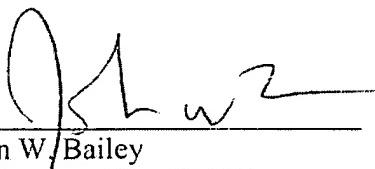
Based upon the amendments and remarks presented herein, the Examiner is respectfully requested to issue a Notice of Allowance clearly indicating that each of pending claims 1 and 4-9 are allowed and patentable under the provisions of Title 35 of the United States Code.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John W. Bailey (Reg. No. 32,881) at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

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